

**TWO NEW SPECIES OF CULICOIDES FROM CHEBOYGAN COUNTY,
MICHIGAN**
(DIPTERA, HELEIDAE)¹

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During the summer of 1954 studies were initiated on the Heleidae of the Douglas Lake region of Cheboygan County, Michigan. Three previously undescribed species of *Culicoides* were recovered. Two are described herewith. The third species was represented by a single male specimen the genitalia of which is preserved on a slide in the collection of the U. S. National Museum.

The techniques of mounting and measuring were the same as those described by Wirth and Blanton (Jour. Wash. Acad. Sci. 43 (3): 69-77, 1955), with one exception. Antennae of the first species were studied in glycerin without a coverslip so that they could be rolled and moved easily. The clearing action of the glycerin was such that the antennal sensoria could be studied in detail. For this purpose 18X eyepieces and a 45X objective were utilized. It was nearly impossible to see all the sensoria on all of the segments while an antenna was in any given position; as a result it was necessary to study each segment in different positions. After considerable study in this manner some doubt still exists as to the exact number of sensoria appearing on segments 3 and 15. Wirth and Blanton use Tillyard's modification of the Comstock-Needham system for designating the wing veins. This procedure is followed here: thus Cu_1 and Cu_2 of some workers become M_{3+4} and Cu_1 , respectively, and cell Cu_1 becomes cell M_4 .

***Culicoides sphagnumensis*, new species**

(Figures 1, 2, 3, 4, 5, 6)

Female.—Length 1.43 to 1.63 mm.; wing 1.43 mm. by 0.66 mm.

Head dark brown, eyes bare, narrowly separated, ratio of separation to diameter of facet in center of eye, 7:12. Antennae with scape dark, pale flagellar segments in proportion of 25:15:15:15:15:15:17:18:45:53:53:56:85; sensoria appear as follows (Fig. 1)³: at least 6 on segment 3 (possible 7 or 8); 3 or 4 and 5; 2 on 6, 7, 8, 9, 10; 4 on 11, 12, 13, 14; and either 6, 7 or 8 on segment 15. Palpal segments (Fig. 6) in proportion 21:40:47:18:20, third segment greatly swollen with a large sensory pit.

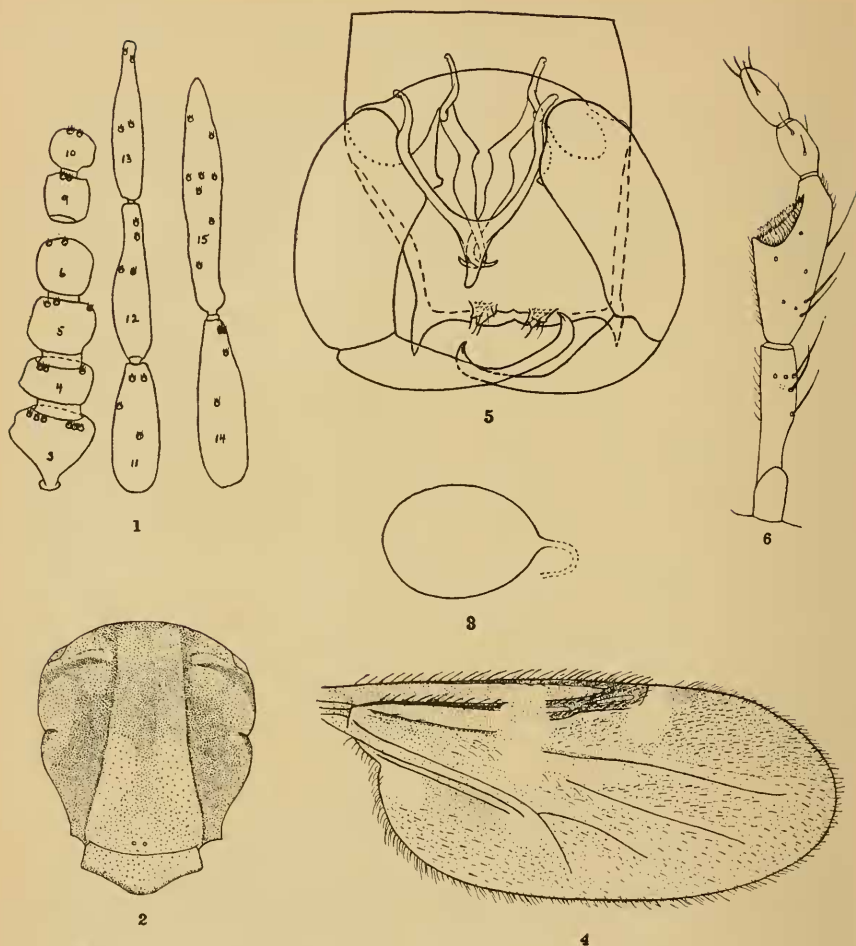
Mesonotum (Fig. 2) dark brown with appressed hairs; a lighter central area which broadens caudally contains markings which are variable⁴. Humeral pits

¹Contribution from the University of Michigan Biological Station.

²I wish to express my sincere thanks to Dr. W. W. Wirth, U. S. Dept. Agriculture, for his aid and many helpful suggestions and to Mr. J. A. Downes of the Canadian Department of Agriculture for permission to mention his collecting records of *C. sphagnumensis*.

³The apparent position on any given segment is, of course, dependent upon the position of the segment on the slide.

⁴The figure includes most of the markings seen in alcoholic specimens; any or all of these markings may be missing and no specimen seen had them all.



Culicoides sphagnumensis n. sp.: fig. 1, female antenna illustrating number and location of sensoria on flagellum (segments 7 and 8 are similar to 6); fig. 2, mesonotum of female; fig. 3, spermatheca; fig. 4, female wing; fig. 5, male genitalia; fig. 6, palpus of female.

in lighter areas. Lighter spot directly behind pit area and an elongate lighter area ventrad to it which extends back across the suture. Scutellum and postscutellum outlined in dark brown. Mesopleura tan or light brown with an elongated somewhat triangular dark spot, the apex of which points towards the wing base; sternopleura and pteropleura dark brown. Legs light brown, trochanter outlined in dark brown, dark knee spot at junction of femora and tibia, tibia with a lighter band at proximal end next to knee spot, comb on distal extremity of hind tibia appearing as a narrow dark brown band.

Wing (Fig. 4) with anterior radial cells usually complete, second radial cell may be incomplete; costa to 0.61 of wing length. Macrotrichia long and numerous except in the basal portion and in costal cell. Anterior margin of wing with a light spot over r-m cross vein extending well beyond media, a spot at the end of the second anterior radial cell extending $\frac{2}{3}$ or more to vein M_1 . Cell M_1 with a single somewhat elongated light spot at base, the size variable; cell M_4 with a light spot which usually has a rather ill-defined border; anal cell with a pale spot of variable size at distal end of anal veins and another spot at cell base. Halteres pale.

Abdomen dark brown, lighter on ventral surface, spermatheca (Fig. 3) one, large and oval.

Male genitalia (Fig. 5).—Ninth sternite broadly and fairly deeply excavated, the membrane bare; ninth tergite quadrate with medium sized, widely separated apicolateral processes, mesal cleft somewhat variable in size but always present. Basistyles stout, ventral root exceedingly small, represented by a slight projection, dorsal root long and tapering; dististyle with apical half more narrow than basal half, tips sharp and incurved. Aedeagus with basal arch approximately $\frac{3}{4}$ of total length, the basal arms slender and curved in and out near base; distal portion broader at base tapering to rounded end. Parameres long with small lateral notch at basal extremity, a mesal point, sometimes appearing quite sharp, at slightly less than half the length; the basal portion of the distal half somewhat swollen, tapering to hooked ends which are usually interlocked.

Types.—Holotype ♀, allotype ♂, *Sphagnum* mat at edge of the pond at Bryant's Bog on the south shore of Douglas Lake, Cheboygan Co., Michigan, July 6 to August 10, 1954, R. W. Williams (recovery cage). Type in U.S.N.M. Paratypes: 15 ♀♀, 15 ♂♂, same data as type; 15 ♀♀, 15 ♂♂ same data as type, but in the Canadian National Collection, Division of Entomology, Department of Agriculture, Ottawa, Canada.

Mr. J. A. Downes, of the Canadian Department of Agriculture, sent me four females of this species which he had collected in a light trap at Rowanton Depot, Quebec, on July 30, and August 4, 1954.

Because of the apparent association of this species with the moss genus *Sphagnum*, the name *sphagnumensis* appeared appropriate.

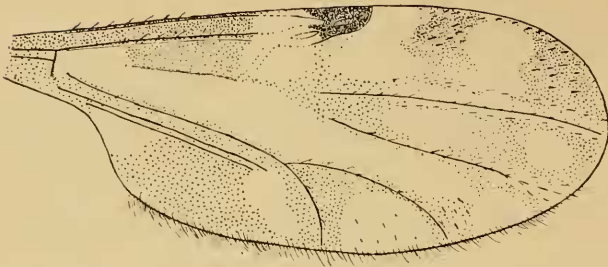
C. sphagnumensis is related to *alaskensis* Wirth, *canithorax* Hoffman, and *crepuscularis* Malloch, but differs from these species in wing spot pattern, possessing more light spots than the first (a spot in cell M_4 and 2 spots in the anal cell) and less than the latter two (such as only 1 light spot in cell R_5). The mesonotal pattern, although not distinctive in itself, differs from the others in possessing a well defined median longitudinal stripe which broadens caudally. The male genitalia lacks an obvious spiculate membrane on the ninth sternite which the other three species possess.

***Culicoides furensoides*, new species**

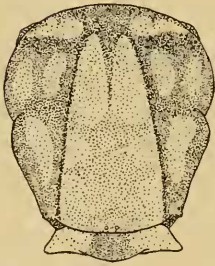
(Figures 7, 8, 9, 10, 11, 12)

Female.—Length 1.21 mm.; wing 1.03 mm. by 0.49 mm.

Head brown; eyes bare, narrowly separated, ratio of separation to diameter of



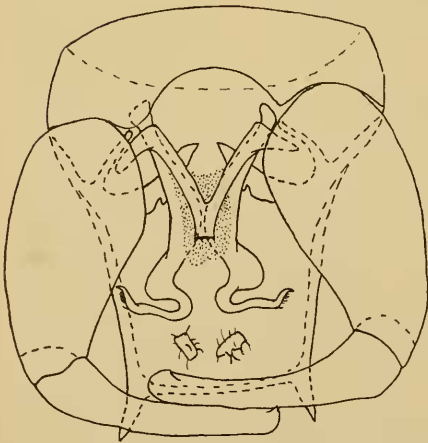
7



8



9



11



10



12

Culicoides furenoides n. sp.: fig. 7, female wing; fig. 8, mesonotum of female; fig. 9, palpus of female; fig. 10, spermatheca; fig. 11, male genitalia; fig. 12, enlarged tip of aedeagus.

facet in middle of eye 7:10. Antennae with scape dark, pale flagellar segments in proportion of 17:16:16:18:18:20:20:20:20:23:23:23:34, single distal sensoria appearing on segments 3, 8, 9 and 10. Palpal segments (Fig. 9) in proportion of 10:25:31:16:18, third segment but scarcely swollen, small sensory pit near apex.

Mesonotum (Fig. 8) with appressed hairs, darker brown sides with a lighter central area broadening slightly caudally; a narrow, elongate, tapering dark brown line proceeding to suture in cephalic-mesal portion of center area with almond-shaped light spots on each side; caudal half of center area with two pairs of lateral light spots. Humeral pits in light area; prescutum with two light spots and scutum with two, but only the dorsal elongate one is seen from above. Scutellum dark brown in middle; postscutellum dark brown. Notopleura darker brown in center; mesopleura with an elongated somewhat triangular brown spot; sternopleura and pteropleura brown. Legs light brown with trochanter outlined in dark brown and dark knee spot at the junction of femora and tibia; broad lighter band below knee spot on tibia, apex of tibia with a faint, slender, dark band.

Wing (Fig. 7) with anterior radial cells complete; costa to 0.485 of wing length. Macrotrichia not numerous, greatest number on distal half of wing particularly in cell R_5 , along distal wing margin and wing veins. Anterior margin of wing with light spot over r-m cross vein falling short of media; first radial cell entirely in this light area while the second is in a very dark spot; cell R_5 with a large light spot at end of costa, which has a constriction on its distal border, and a second light spot in the distal half of cell which does not touch the border of the cell and which tends to be somewhat concave on its distal border and convex on the proximal border; cell M_1 with two light spots, the distal one not touching the border; base of cell M_2 with a long light streak, which at the base extends into the base of the radial cell, and a second rounded spot broadly attaining wing margin; cell M_4 with a large rounded spot; anal cell with a basal pale spot and an elongated constricted spot extending from the distal end of anal veins nearly to border of wing. Halteres pale.

Abdomen brown, spermatheca two, subequal, subspherical (Fig. 10).

Male genitalia (Figs. 11, 12).—Ninth sternite short with narrowly rounded mesal excavation, the posterior membrane bare; ninth tergite constricting rather sharply at basistyles with rather widely separated, large apicolateral processes; mesal cleft absent. Basistyles stout, ventral roots stout and boat-hook shaped, dorsal roots about the same length but not as stout; dististyles nearly straight, not sharply bent at tip and with a small point. Aedeagus short and stout, arms with a right angle bend at base, the ratio of the length of the piece beyond the bend to the arms and to the apex is in the proportion of 11:25:15; apex (Fig. 12) curved up and back, with four flattened subapical spines just before the rounded tip; the apex and distal portion of the arms surrounded by a membrane. Parameres with bases broadened, stems expand mesally to apex of aedeagus, distal halves with large lateral pouches beyond which they become narrow and sinuous, tapering to sharp apical points with six subapical lateral hairs, the basal one somewhat set apart from the others.

Types.—Holotype ♀; allotype ♂, *Sphagnum* mat at edge of the pond at Bryant's Bog, Cheboygan County, Michigan, July 22, 1954, R. W. Williams (recovery cage). Type in U.S.N.M. Paratypes: 1 ♀, 1 ♂, same data as type.

The male genitalia is perhaps more similar to that of *furens* (Poey) than to any other described species in the eastern United States, thus the name *furensoides*—like *furens*. However, it differs from that of *furens* by possessing a prominent right-angled basal appendage on each arm of the aedeagus. The mesonotum lacks the multi-spotted appearance of *furens*, and a notable distinction in wing markings between these two species is the presence of only 2 spots in cell R_5 in *furensoides* as opposed to the 3 in *furens*.

A NEW GENUS AND SPECIES OF NORTH AMERICAN CYNIPOIDEA
(HYMENOPTERA)

In the key to the Eucoilinae on p. 112 in my "Cynipoidea (Hym.) 1905-1950" a provisional new genus E was proposed for small robust species with an unusually short, closed radial cell (not twice as long as broad), wing pubescent and ciliate, mesoscutum smooth, disk rounded behind and not striate, abdomen with a ring of hairs at base. Single collected specimens from widely separated localities had been seen and in a few cases there was a record of the specimen having been reared from leaf miners. In June, 1953, Mr. George P. Wene of the Lower Rio Grande Valley Experiment Station at Westlaco, Texas, sent a small series with a definite rearing record, and it is from this material that the genus is named and a species described.

***Ganaspidium pusillae*, new genus, new species**

Female.—Body black, smooth, bare except for white pubescence on sides of pronotum, propodeum, on metapleura and base of tergite II. Head from above transverse, 37 units wide by 20 units long, occiput concave, cheeks not broadened behind eyes; from in front as high as broad, malar space striate, about one-half eye, antennae 13-segmented with a definite 9-segmented club, length 1.5 times width of head, segments 3 and 4 equal. Mesoscutum smooth. Scutellum disk smooth, rounded behind with a row of marginal hairs, eup large, well-elevated with a small pit behind. Wing pubescent, ciliate, length 1.9 times width of head, distally broad (over 5 times width of radial cell), radial cell 1.5 times as long as broad, marginal vein not as heavy as others, cubitus obsolete. Abdomen sessile, little longer than thorax, length to height to width as 38:25:19. Length 0.8-1.15 mm. Average of four, 1.0 mm.

Male.—Similar to female with antenna filiform, 15-segmented, length 2.6 times width of head, segments 3 and 4 equal. Length 0.95-1.05 mm. Average of six, 0.98 mm.

Types.—U.S.N.M. No. 62839. Type female, allotype and 4 paratypes.

Host.—Reared from the serpentine leaf miner, *Liriomyza pusilla* (Meig.), infesting black-eyed peas at Monte Alto, Texas. The leaves were collected May 12, 1953, and the cynipids emerged May 29 and 30. Other parasites emerged before the cynipids. Ice cream cartons were used in rearing.—By LEWIS H. WELD, Arlington, Va.